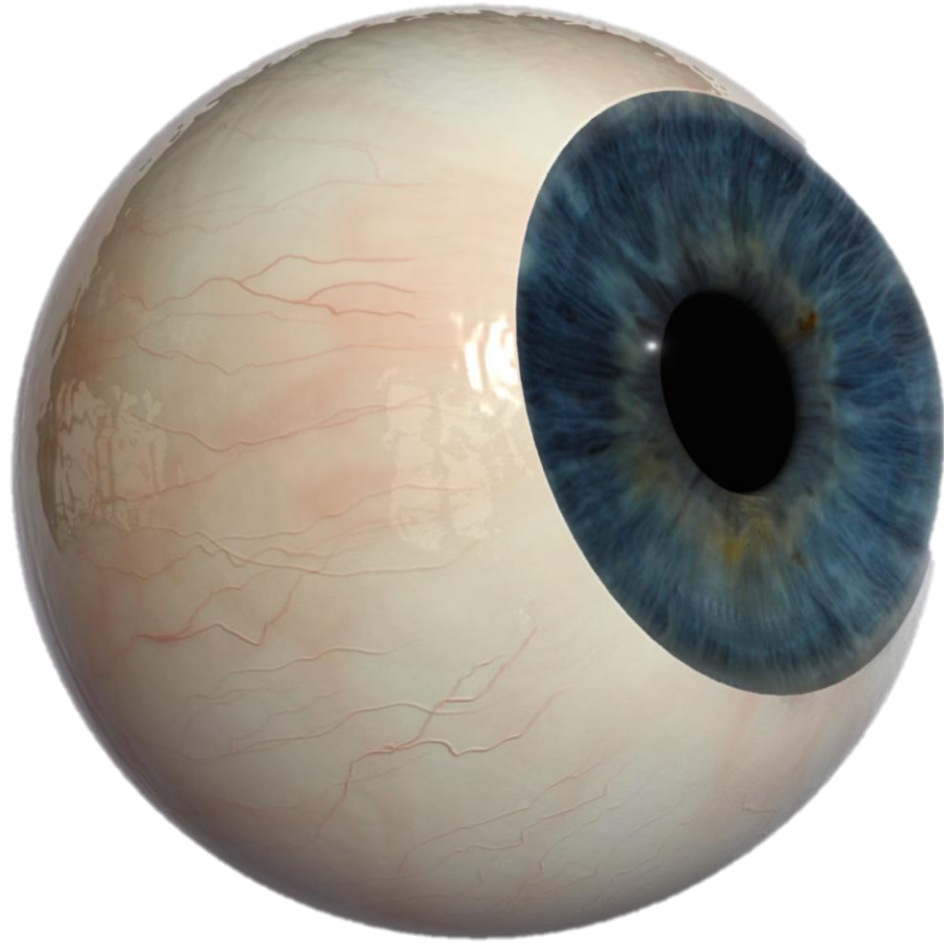




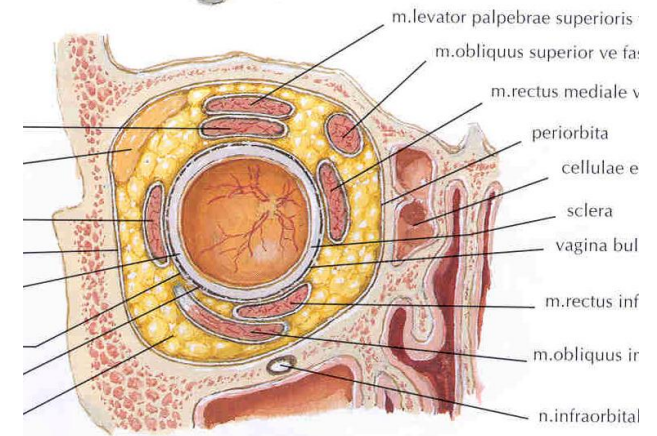
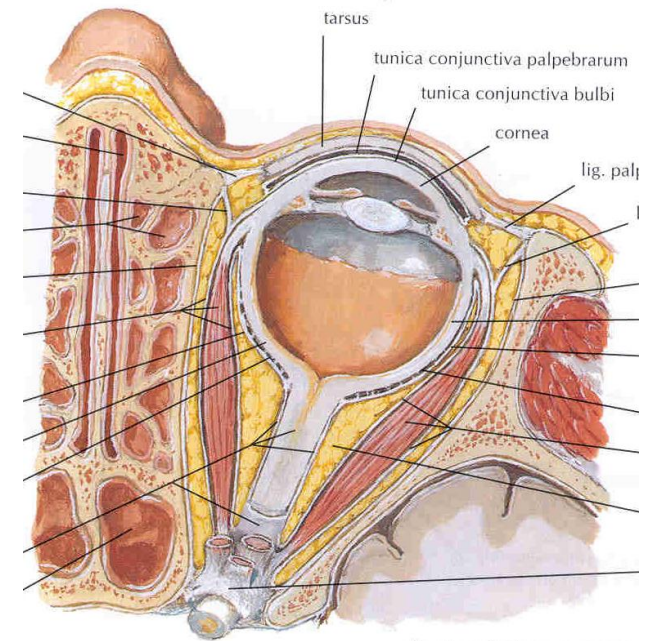
THE EYEBALL

ProfDrMTY

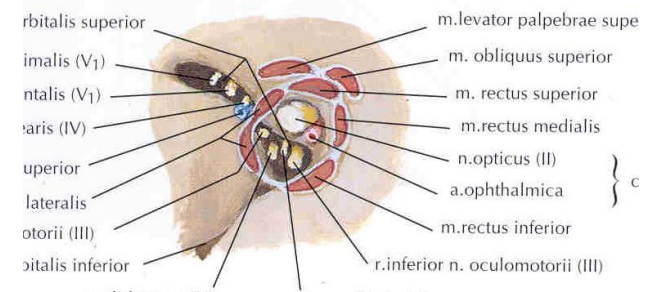
Department of Anatomy

THE PERIPHERAL ORGAN OF VISION

- in the orbit- embedded in orbital fat
- fascial sheath- capsule of Tenon
 - 1/6 anterior segment transparent
 - 5/6 posterior segment opaque



Çasların tutunma yerleri ve orbita'ya giren damar ve sinirler



AXES OF EYEBALL

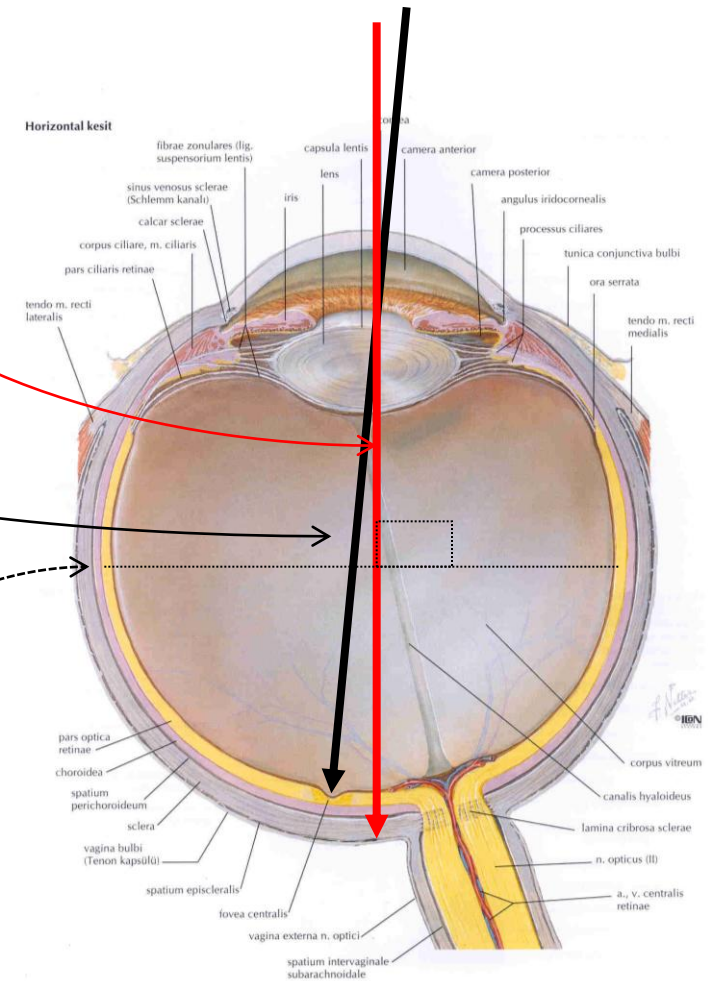
OCULAR AXIS

anterior pole-posterior pole
parallel in two eyeballs

OPTIC AXIS

posterior pole of lens-fovea
centralis
not parallel in two eyeballs

EQUATOR OF EYEBALL

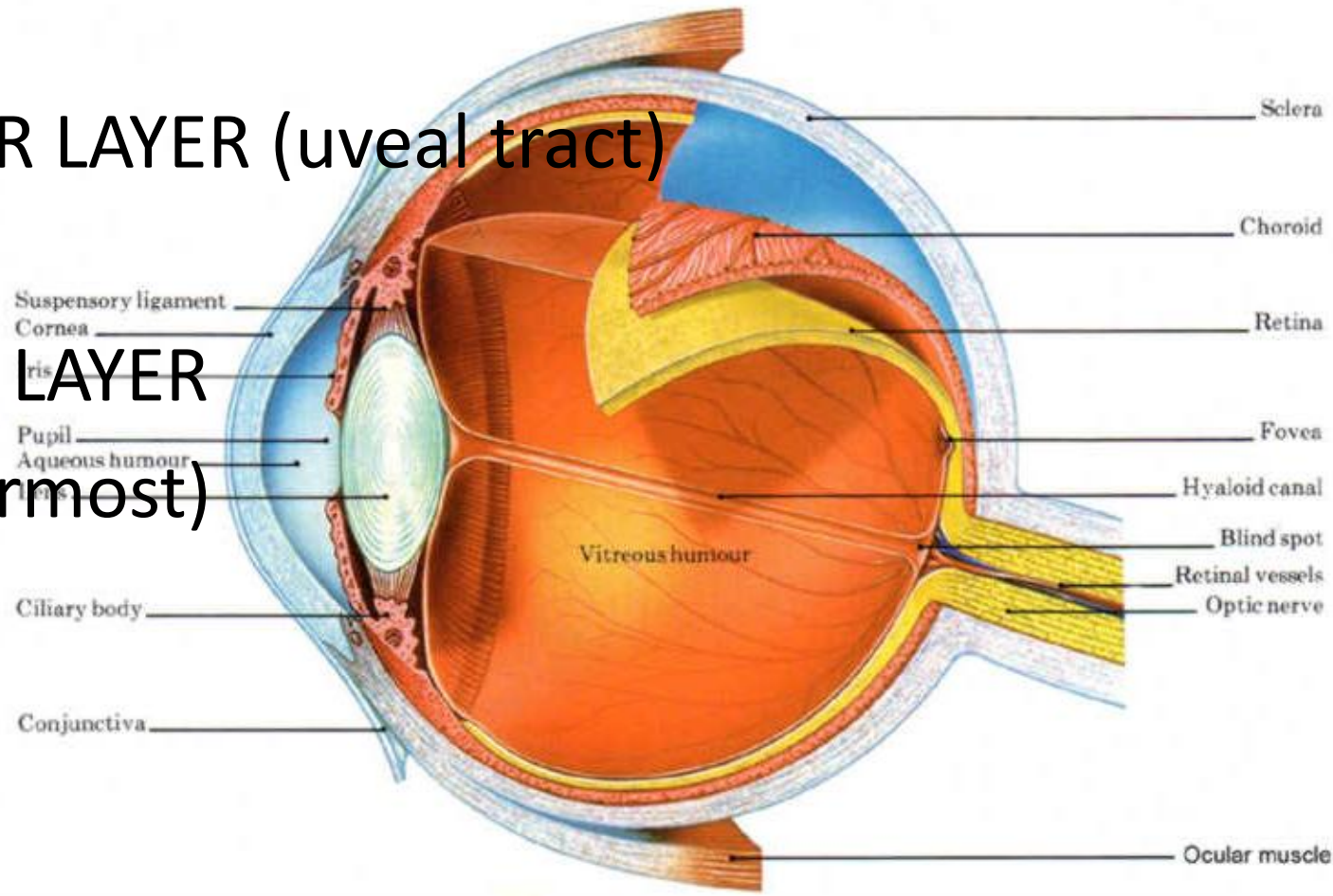


LAYERS (TUNICS)

1-FIBROUS LAYER (outermost)

2- VASCULAR LAYER (uveal tract)

3-NERVOUS LAYER
(retina-innermost)



FIBROUS LAYER

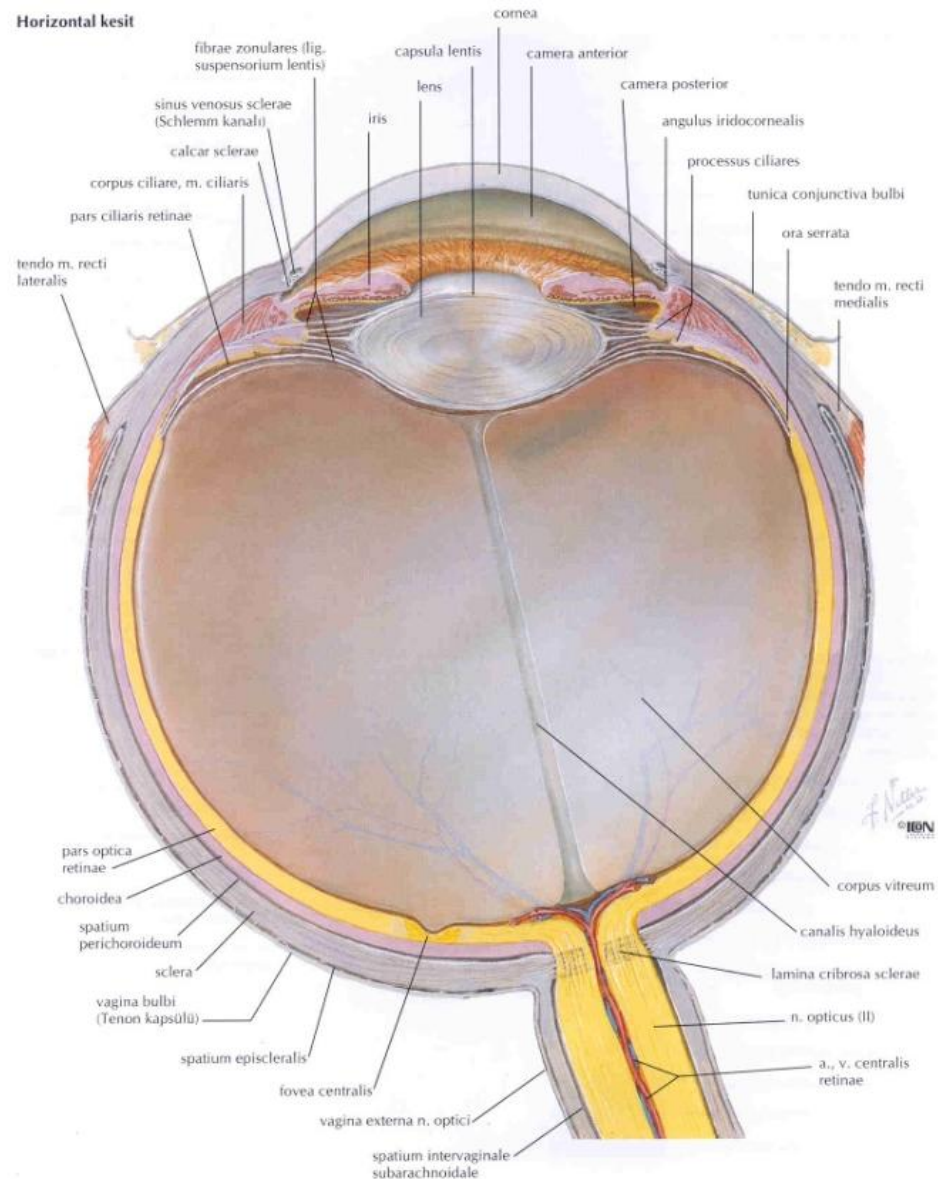
- A place for the attachment of muscles
- Maintain a constant intraocular pressure
- Protect deeply located structures

❖ CORNEA

1/6 ANTERIOR PART (Transparent)

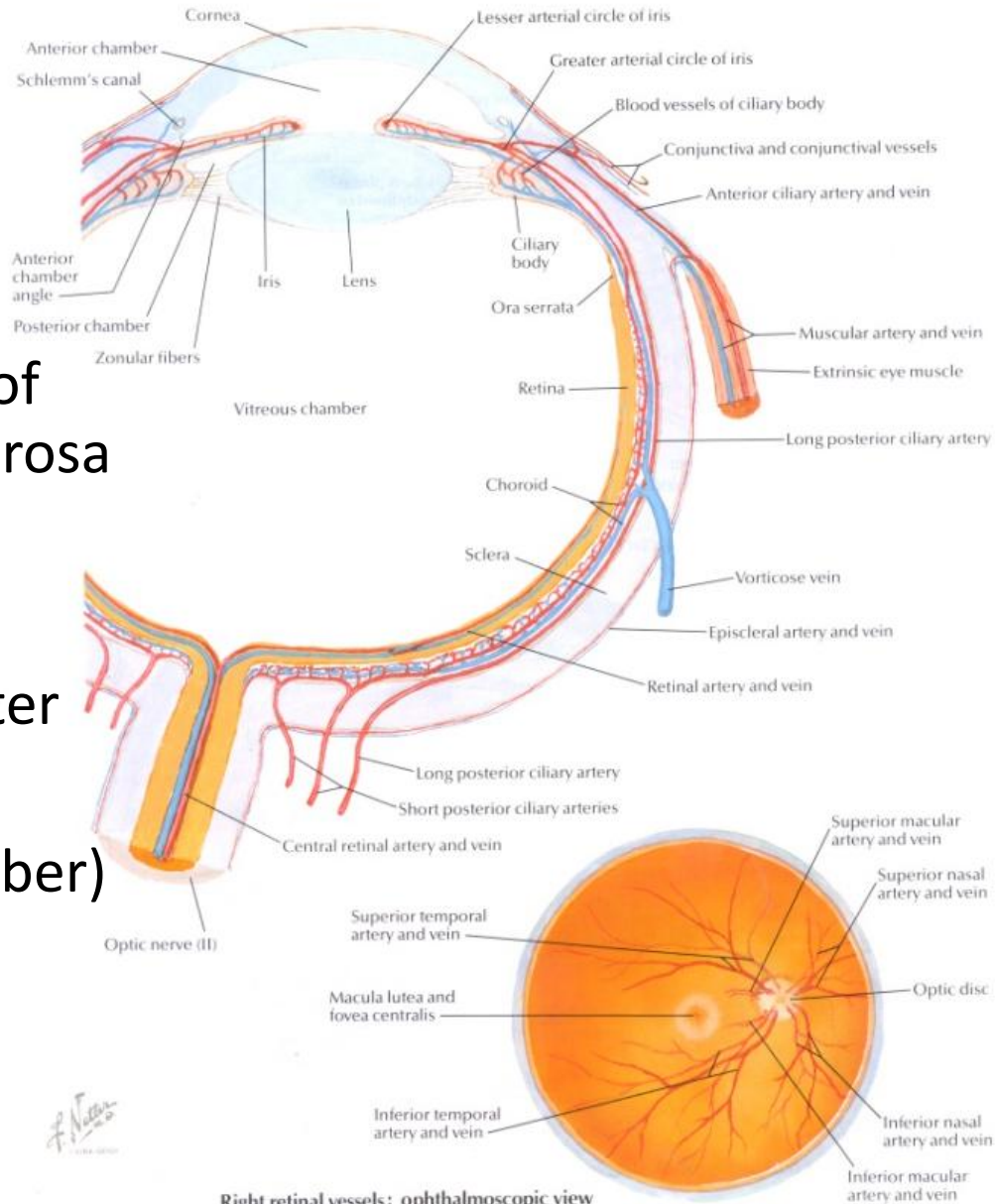
❖ SCLERA

5/6 POSTERIOR PART (Opaque)



SCLERA

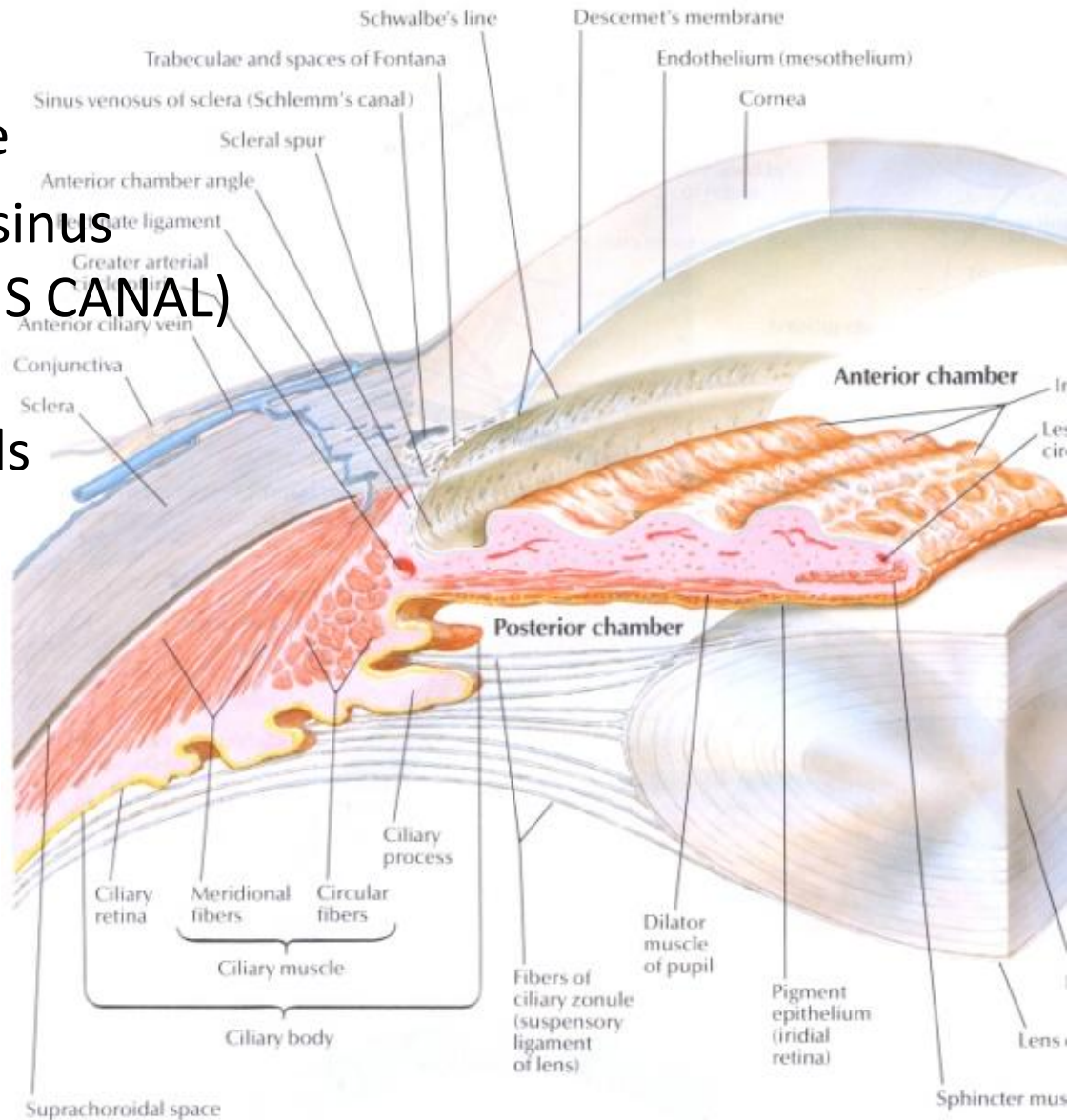
- **Tenons capsule** encloses the eyeball
- Posteriorly pierced by fibers of the optic nerve @lamina cribrosa sclera
- ciliary vessels and nerves
- central vessels of retina (center of lam. crib. Scl.)
- venae vorticosae (4-5 in number)

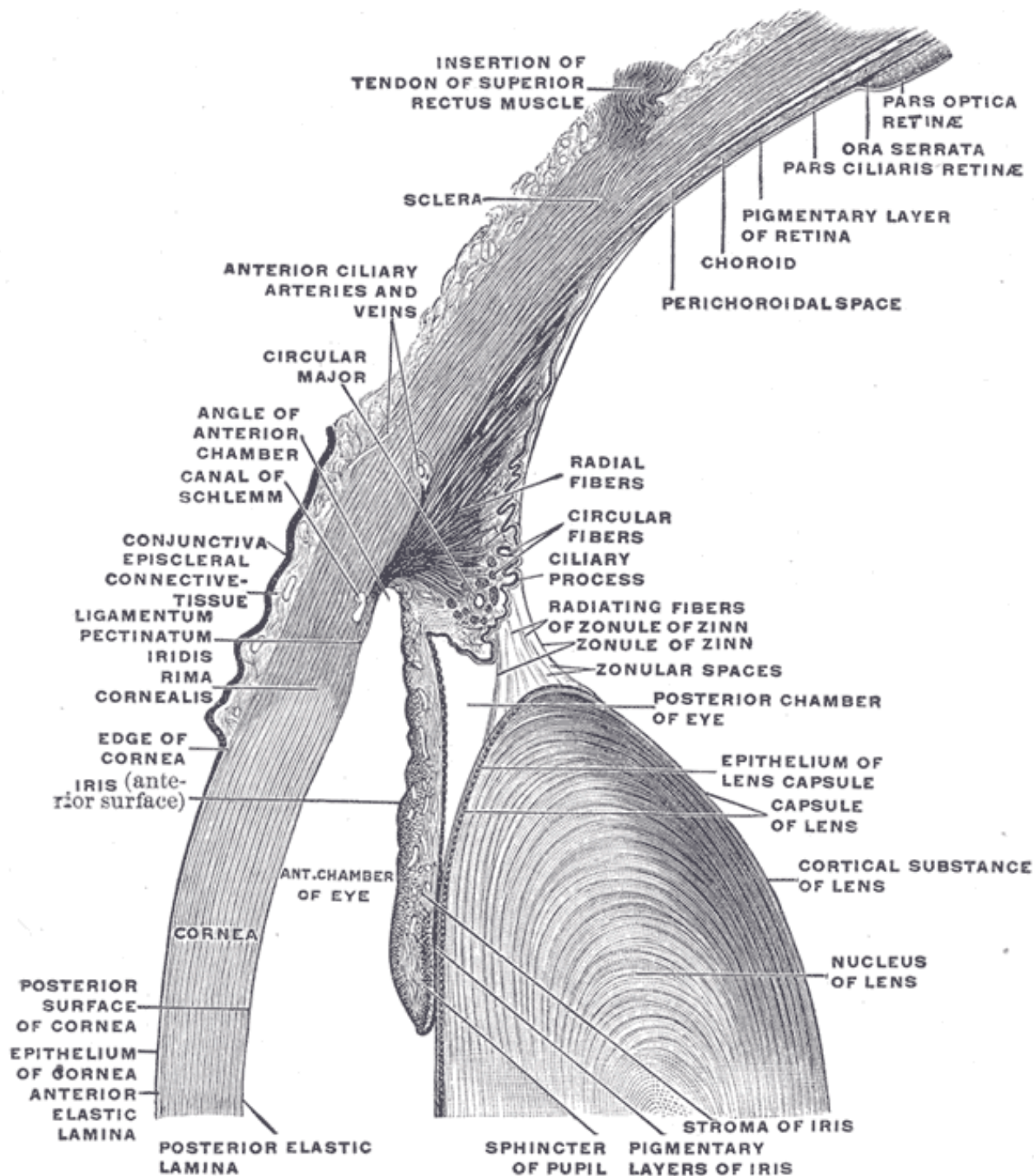


SCLERA

Sclera meets the cornea at the sclerocorneal junction where sinus venosus sclera (SCHLEMM'S CANAL)

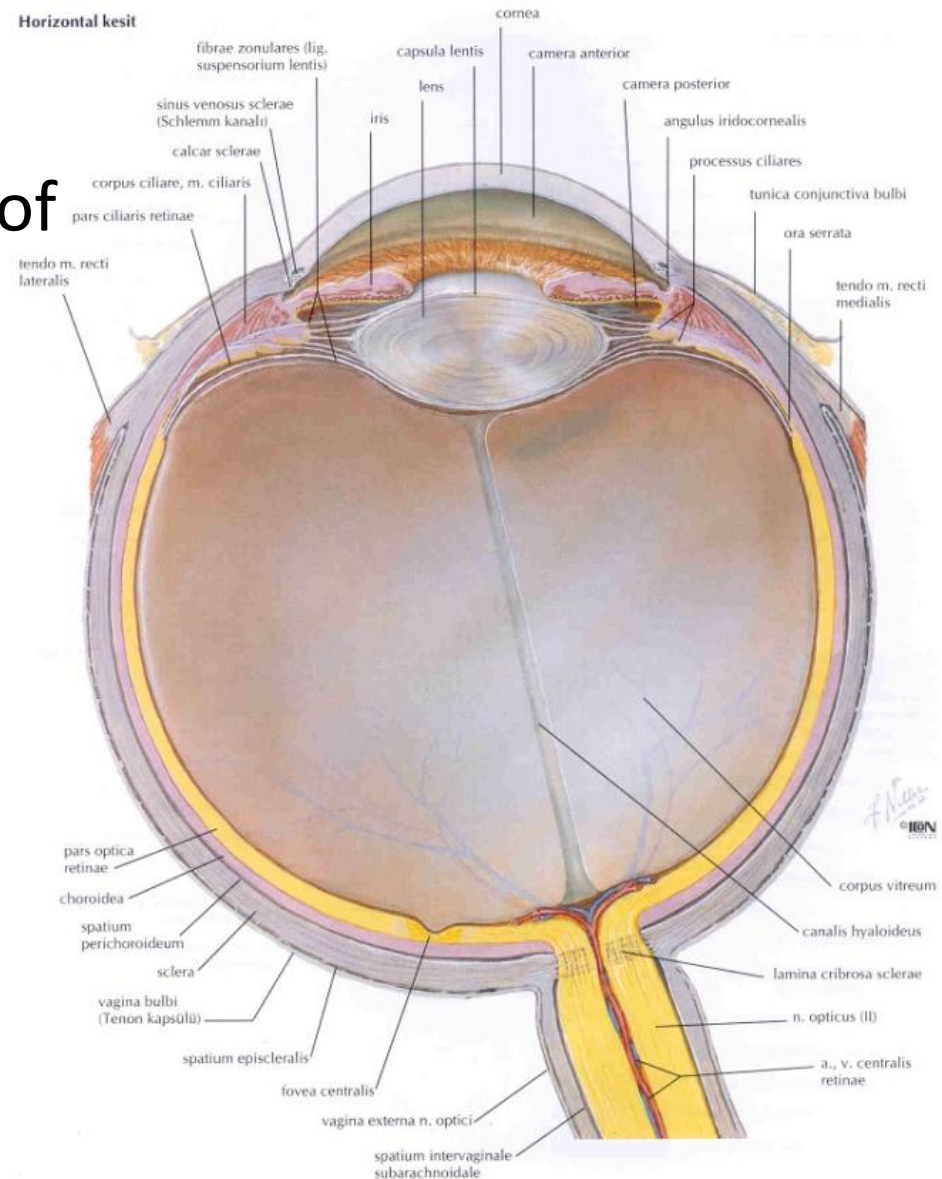
Vessels & Nerves (ciliary vessels and nn)





CORNEA

- The major site of refraction of light enters
- More convex, 1/6 anterior part.
- Transparent, avascular and rich in nerves



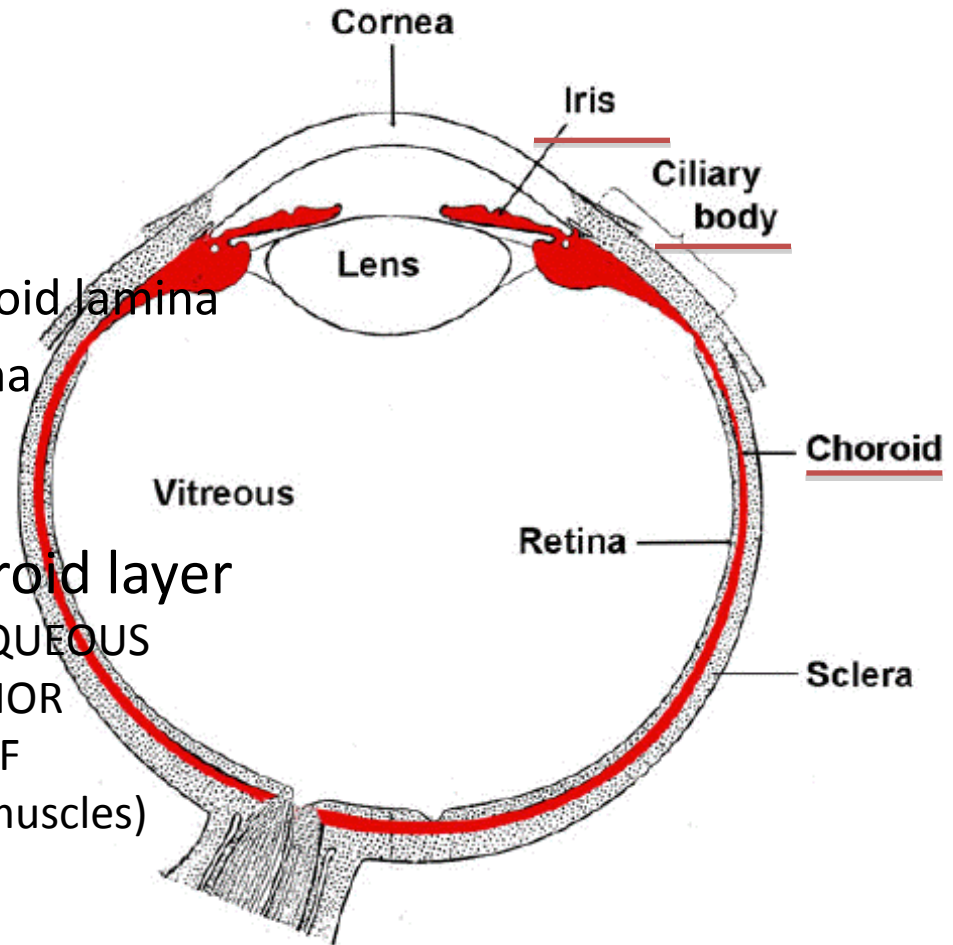
VASCULAR LAYER (UVEAL TRACT)

- **CHOROID**
- 5/6 posterior part of the eyeball.
- Thin, highly vascular membrane.
- Color— dark brown
- Extends as far as the ora serrata.
- Outer surface is related to—suprachoroid lamina
- Inner surface—pigmented layer of retina

- **CILIARY BODY**

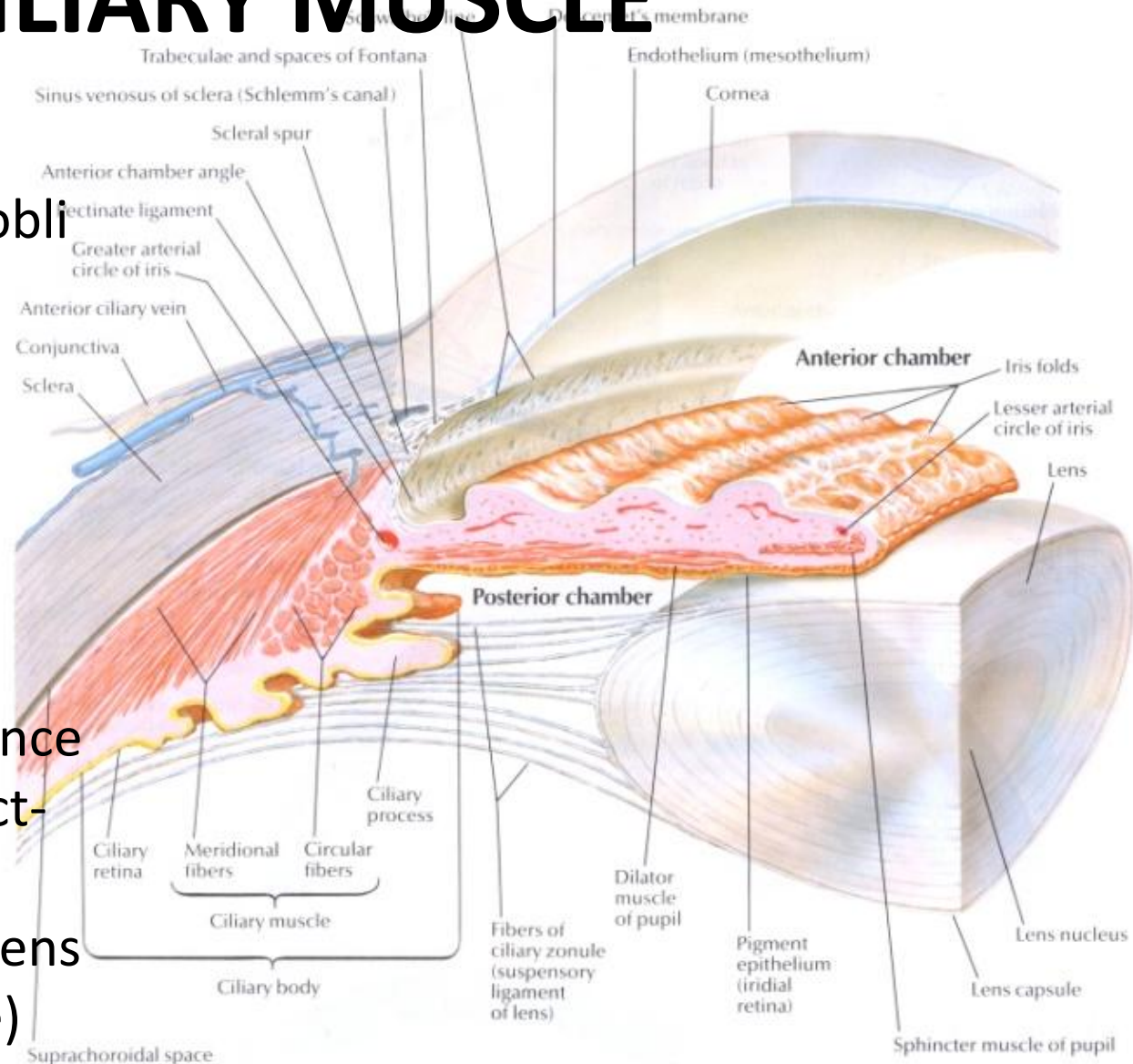
- Anterior continuation of the choroid layer
(SUSPENSION OF LENS, PRODUCTION OF AQUEOUS HUMOUR, CHANGING THE ANTEROPOSTERIOR DISTANCE OF LENS FOR THE MECHANISM OF ACCOMODATION with help of the smooth muscles)

- **IRIS**



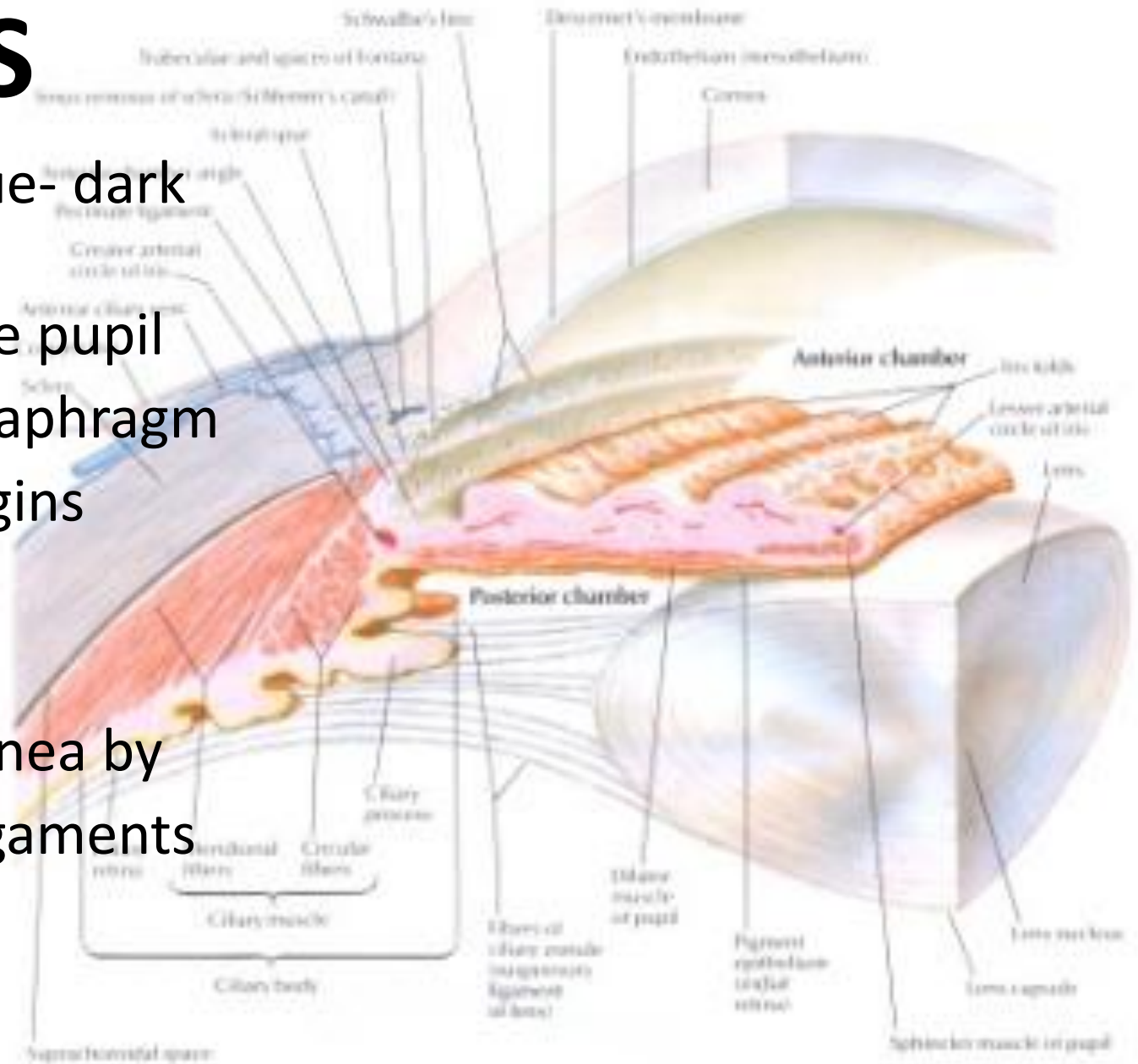
CILIARY MUSCLE

- Smooth muscles- longitudinal, circular, oblique fibers
- Nerves- Oculomotor- postganglionic fibers from ciliary ganglion- parasympathetic
- Function: changes anteroposterior distance of lens (when contract- **suspensory lig.** get relaxed-thickness of lens increases or opposite)



IRIS

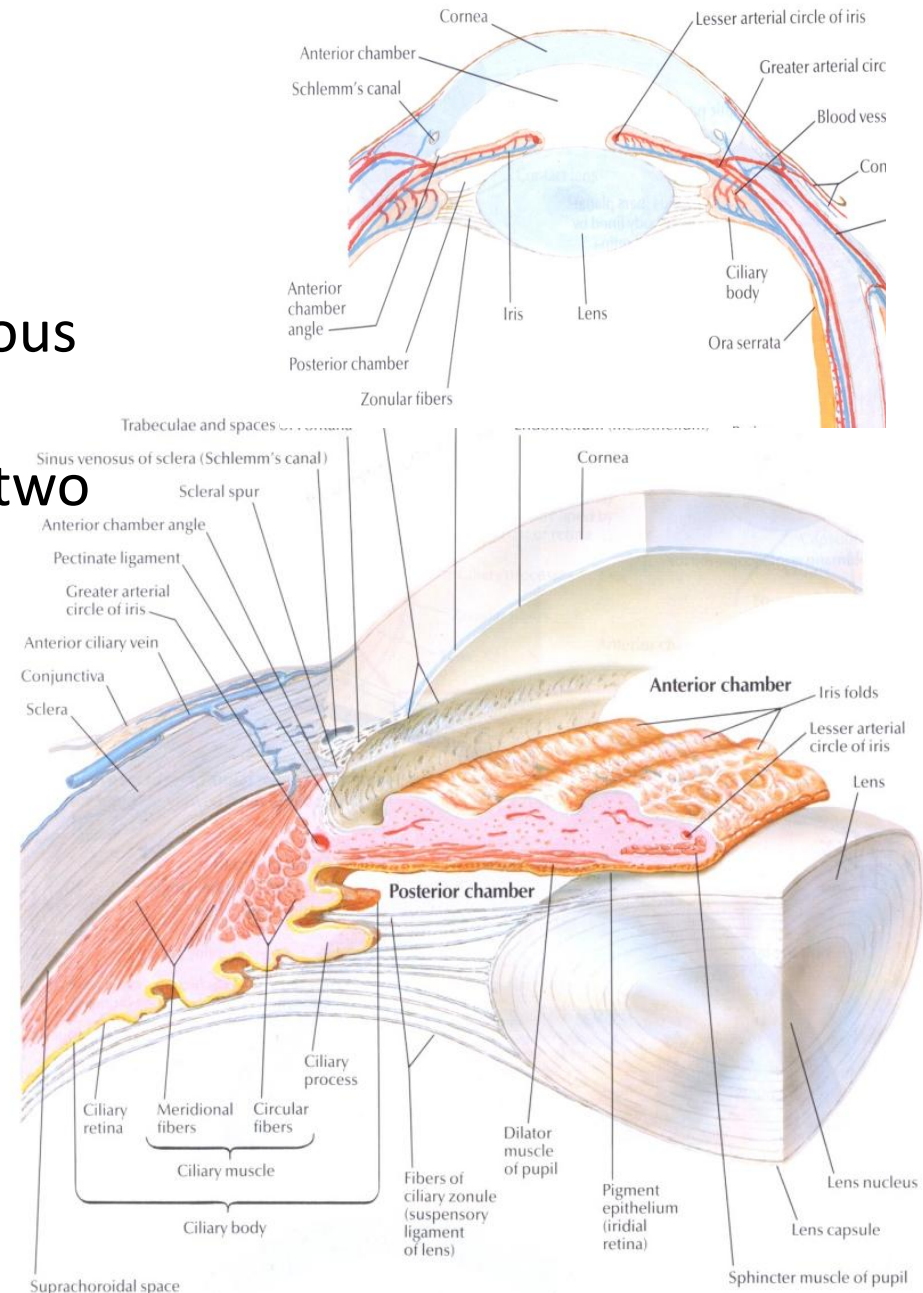
- Coloured (blue- dark brown)
 - Surrounds the pupil
 - Adjustable diaphragm
 - Has two margins
 - CILIARY
 - PUPILLARY
- Attached to cornea by
- pectinate ligaments



IRIS

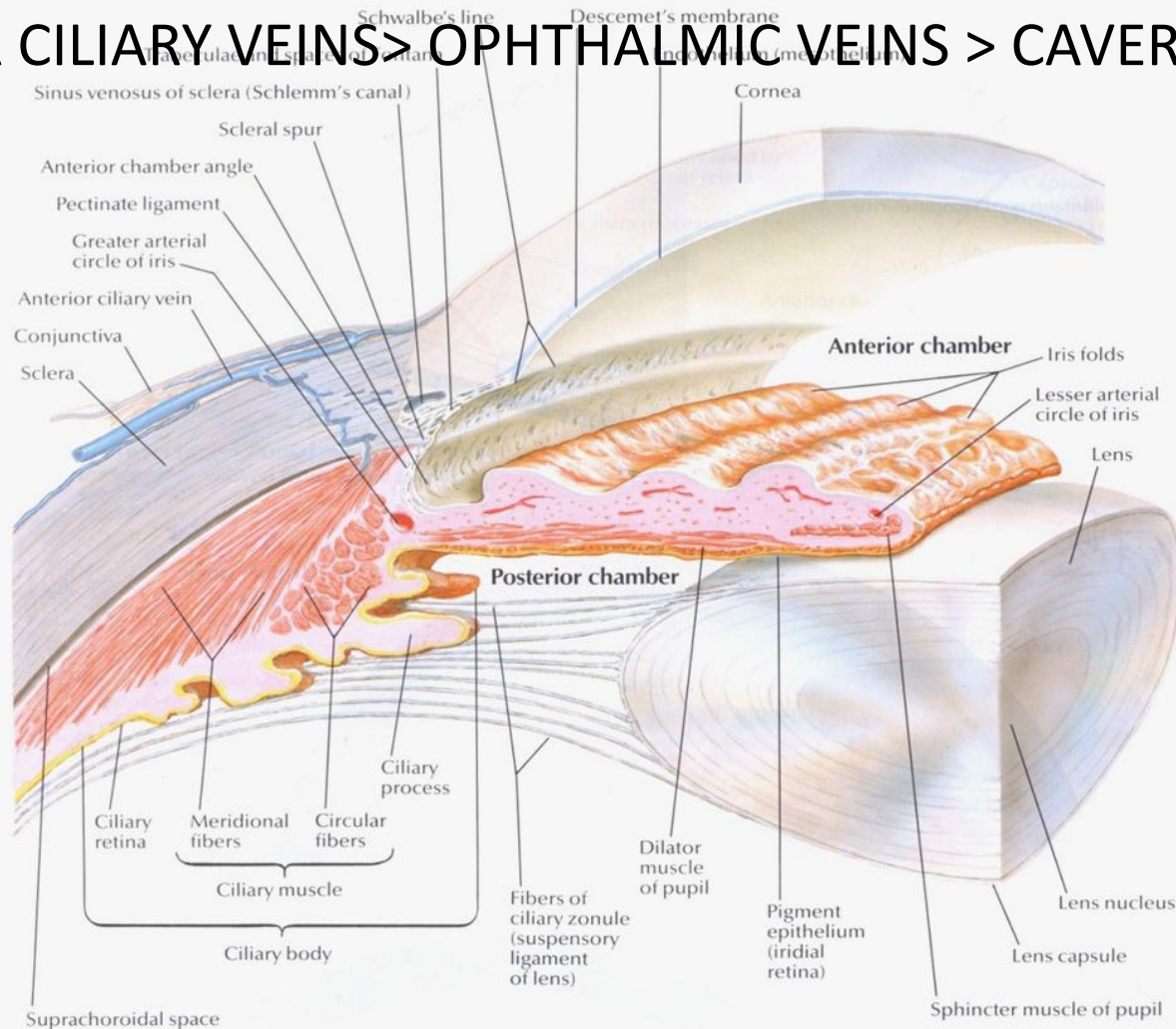
- Somewhat suspended in aqueous humour and divides the area between cornea and lens into two chambers
- ANTERIOR and POSTERIOR

Cornea – iris meet at
—IRIDOCORNEAL ANGLE



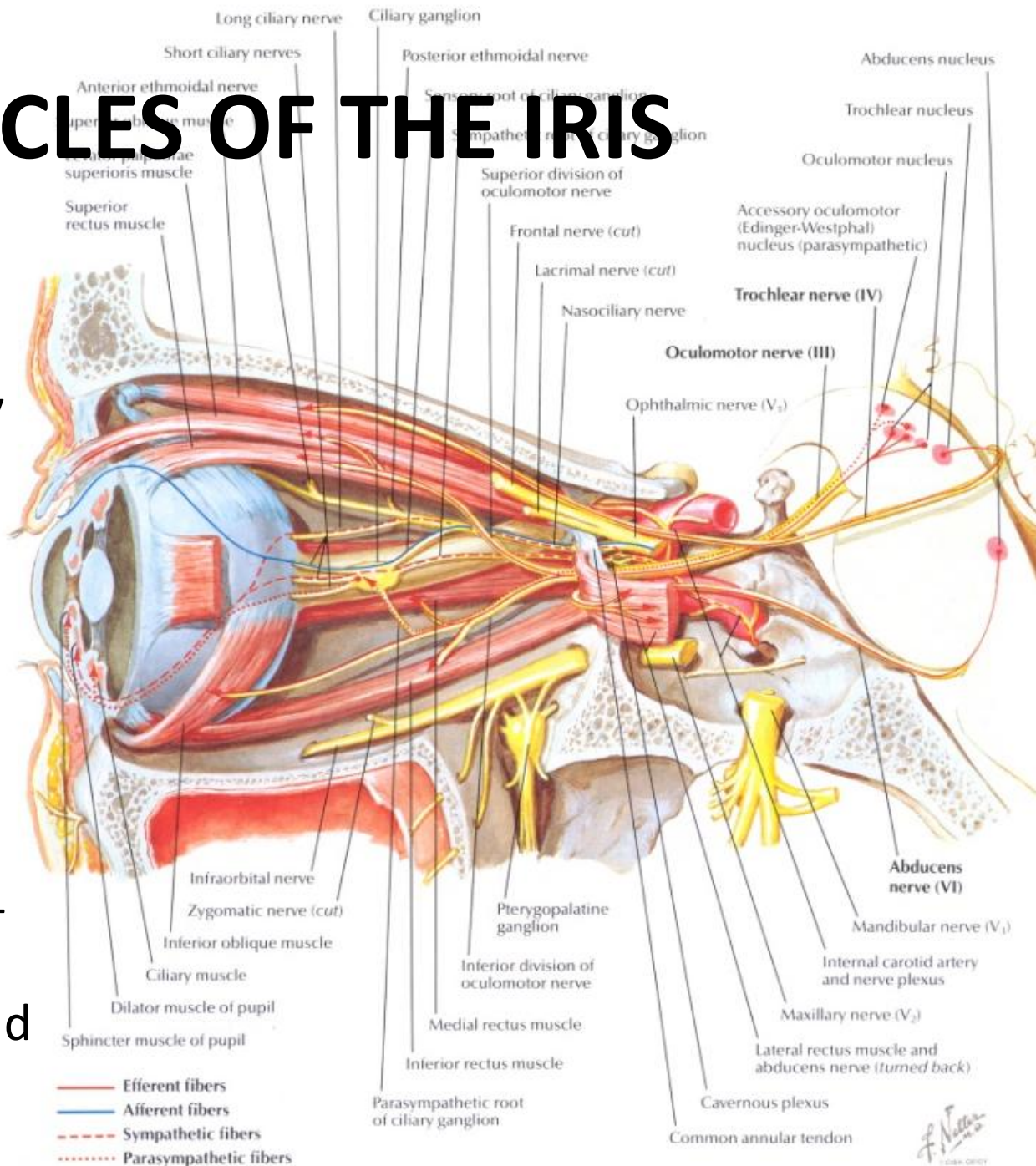
AQUEOUS HUMOUR circulation

CILIARY PROCESSES > POSTERIOR CHAMBER > PUPIL > ANTERIOR CHAMBER > SINUS VENOSUS SCLERAE (at the iridocorneal angle)> ANTERIOR CILIARY VEINS> OPHTHALMIC VEINS > CAVERNOUS SINUS



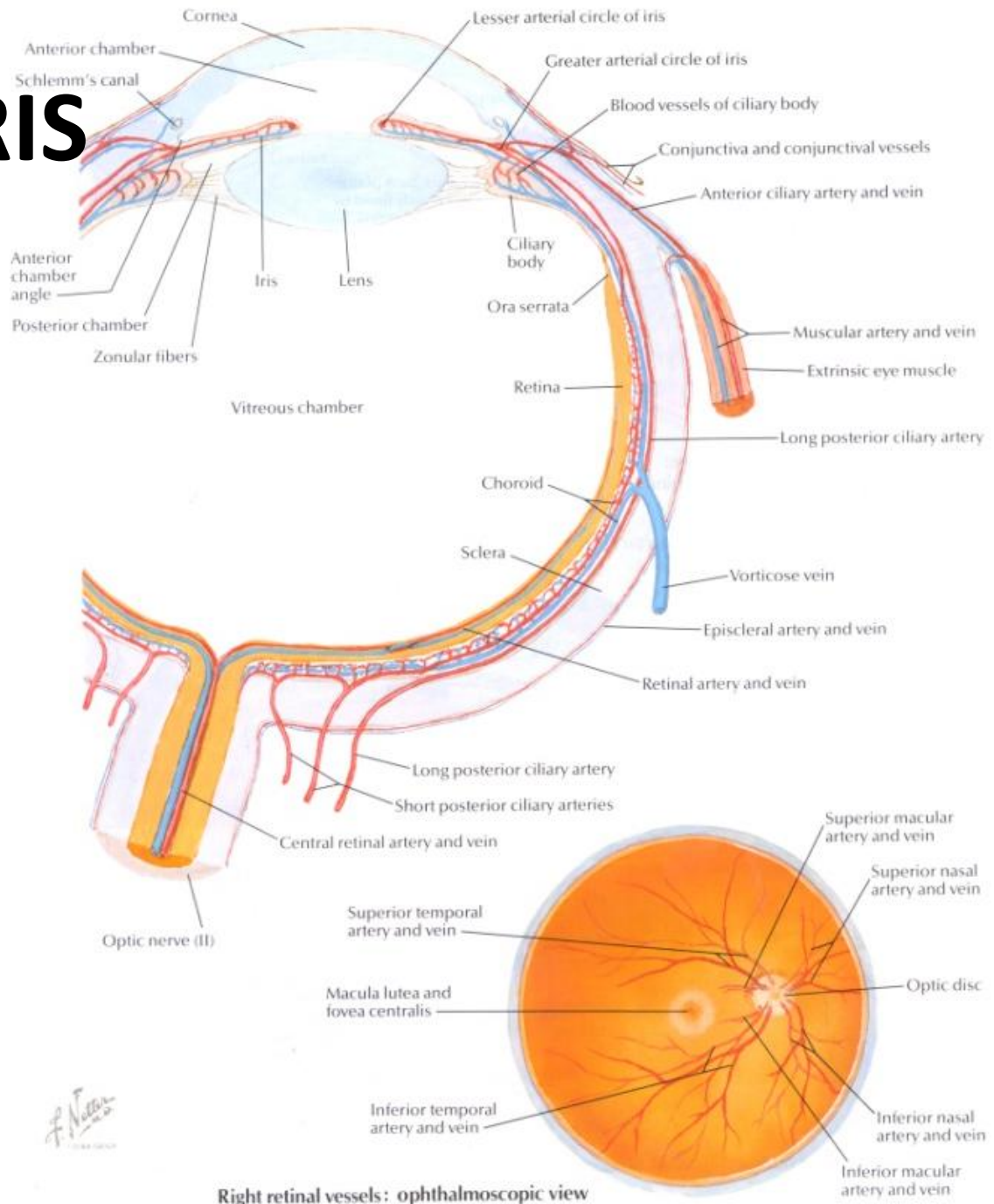
MUSCLES OF THE IRIS

- SPHINCTER PUPILLA MUSCLE—smooth muscle-innervated by **parasymp.**-short ciliary nn.
(oculomotor n.)
- DILATOR PUPILLA MUSCLE—smooth muscle-innervated by **symp.**—sup. cervical symp. gang.-int. car. a.-long ciliary nn.(nasociliary n.) –(and short ciliary nn.)



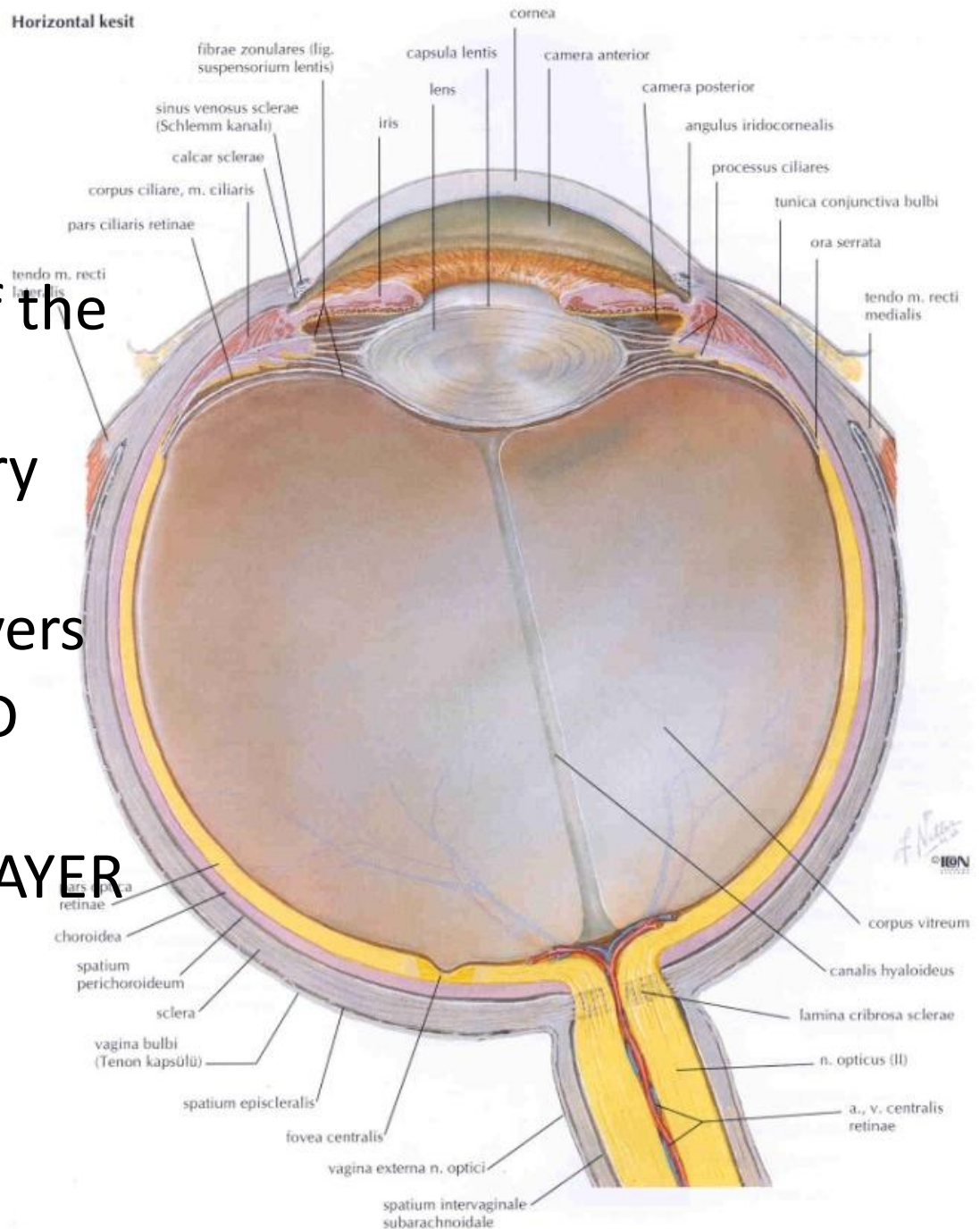
ARTERIES OF IRIS

- long posterior ciliary aa.- (ophthalmic a.)
- Short posterior ciliary aa.-(muscular brs.)



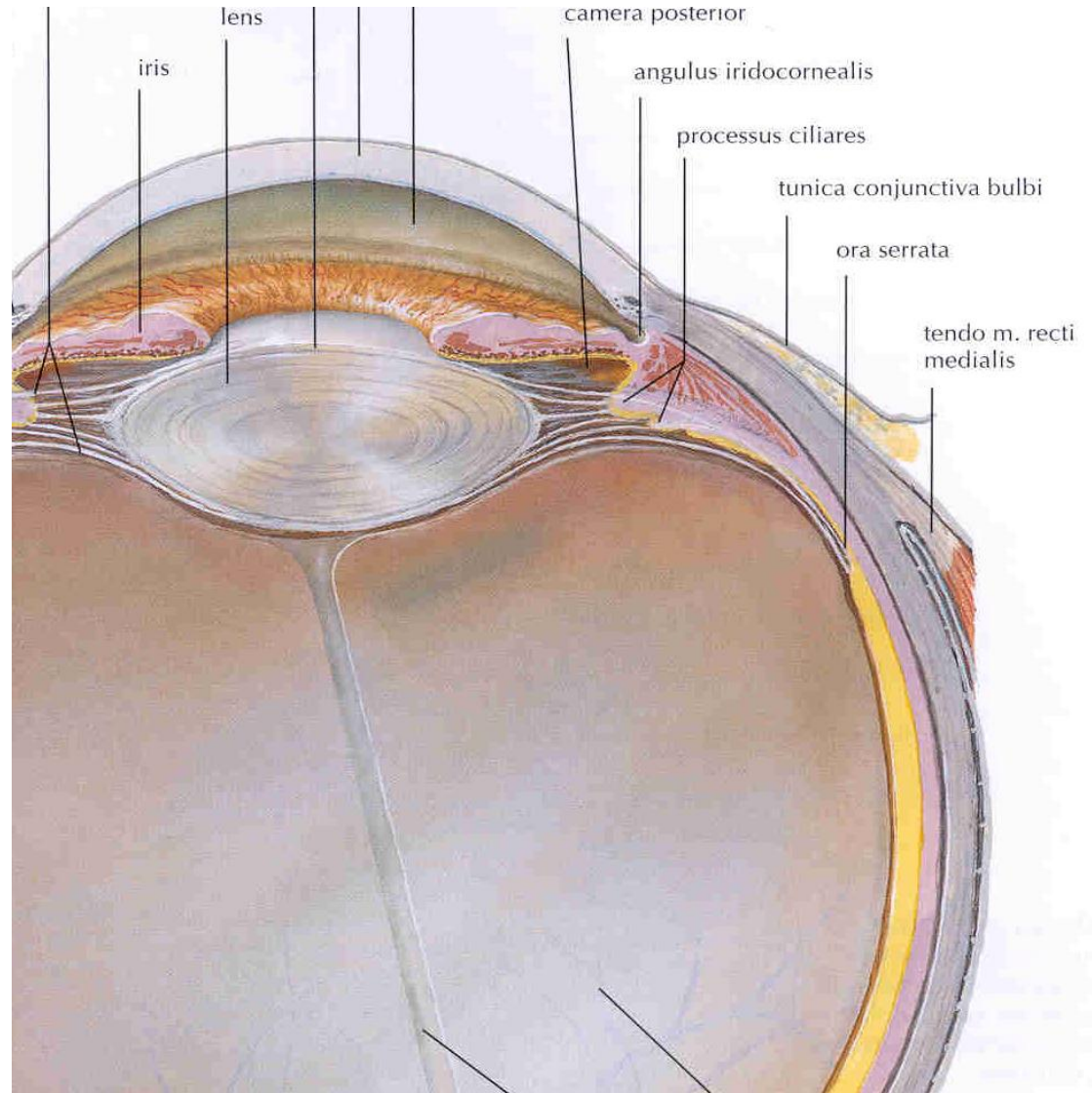
RETINA

- Innermost layer of the eyeball.
 - The neural- sensory layer
 - Composed of 2 layers
- outer PIGMENTED LAYER
- inner NERVOUS LAYER



ORA SERRATA

- The place where nervous layer of retina ends.



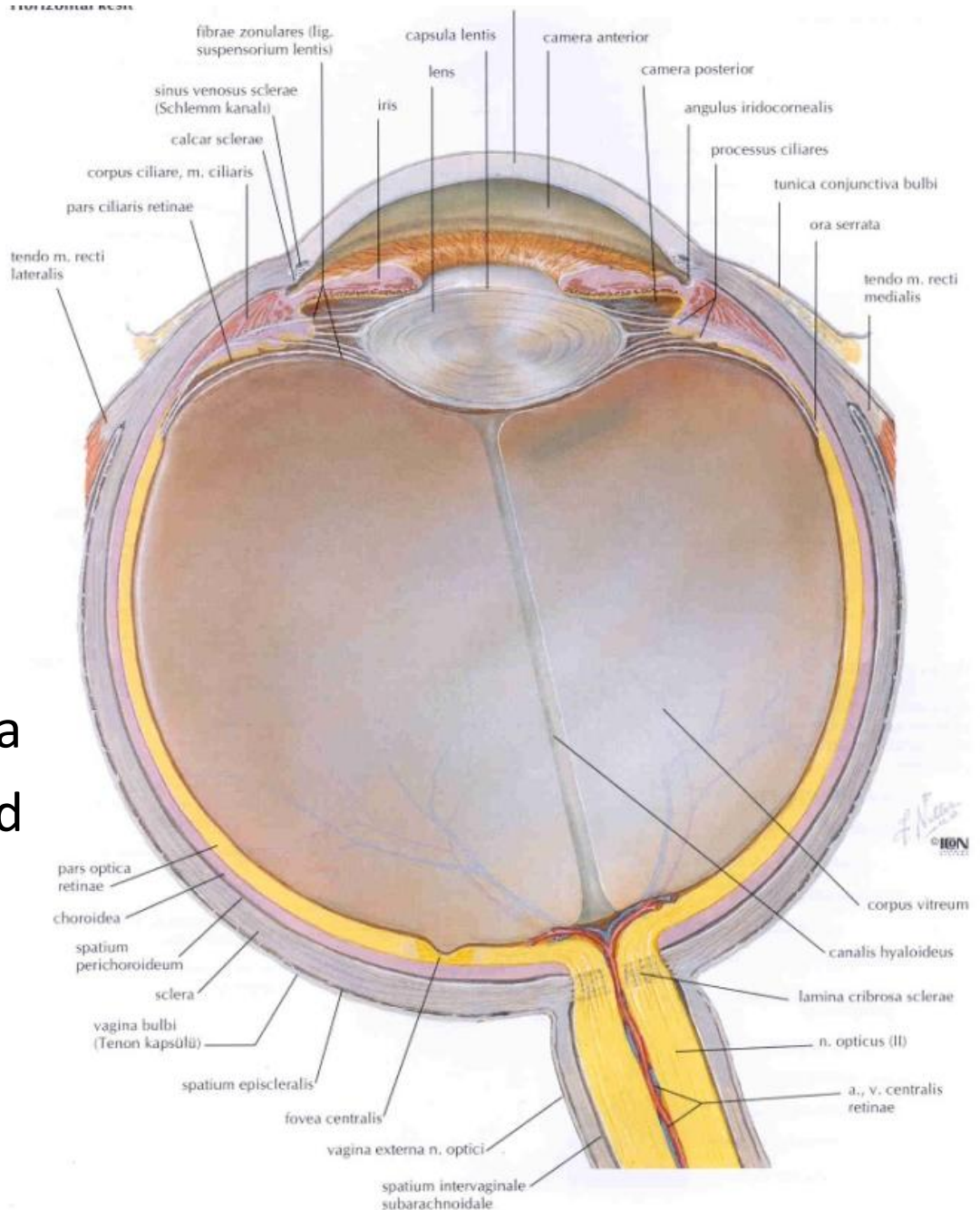
PARTS OF RETINA

OPTIC PART

from optic disc to ora
serrata pigmented+
nervous layers present

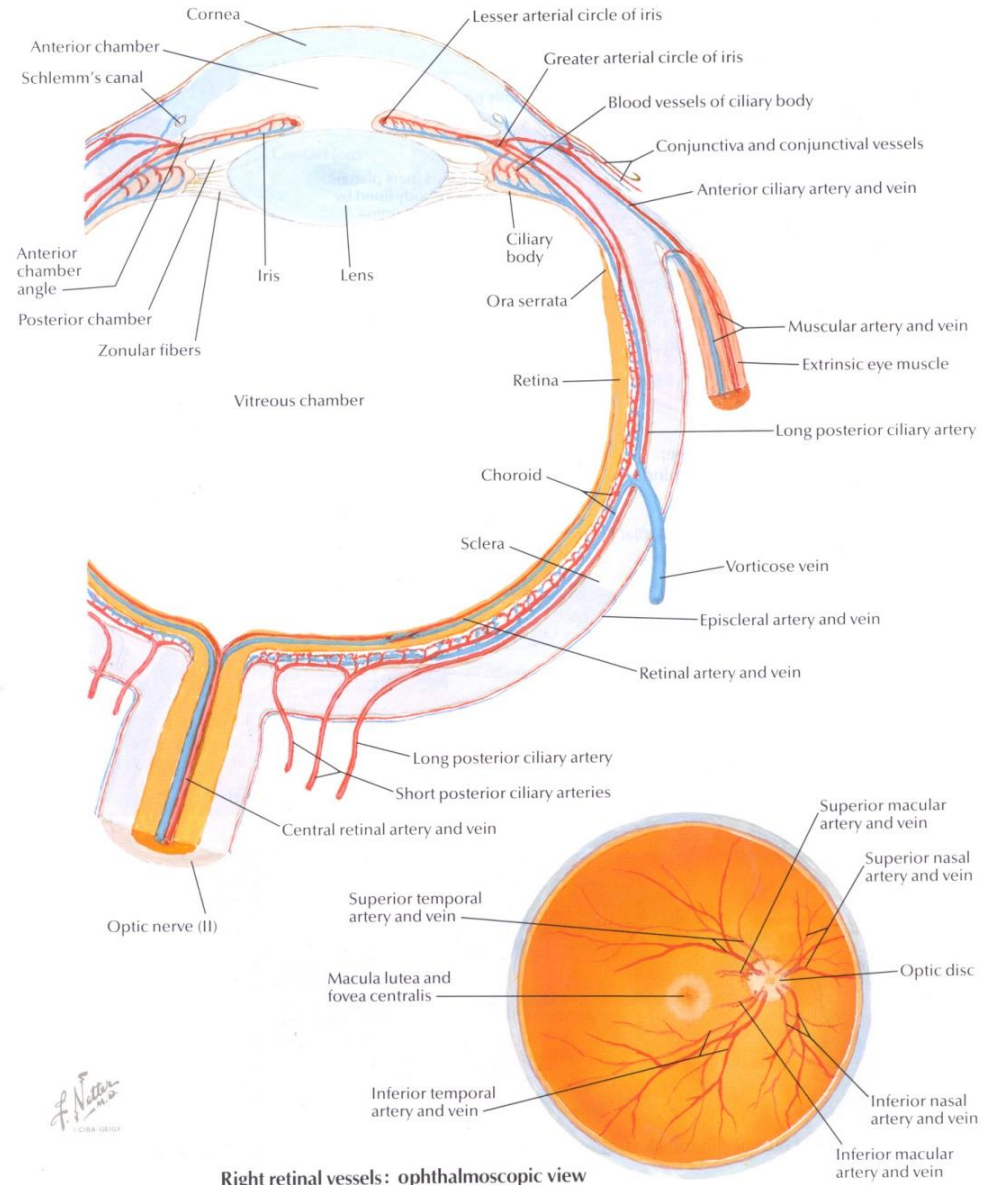
PARS CAECA RETINA

Blind part from ora serrata
anteriorly>only pigmented
layer present



MACULA LUTEA-FOVEA CENTRALIS

- MACULA LUTEA (YELLOW SPOT)
- FOVEA CENTRALIS is the central depression located in the macula lutea where VISUAL RESOLUTION IS HIGH



OPTIC DISC

OPTIC DISC = BLIND SPOT

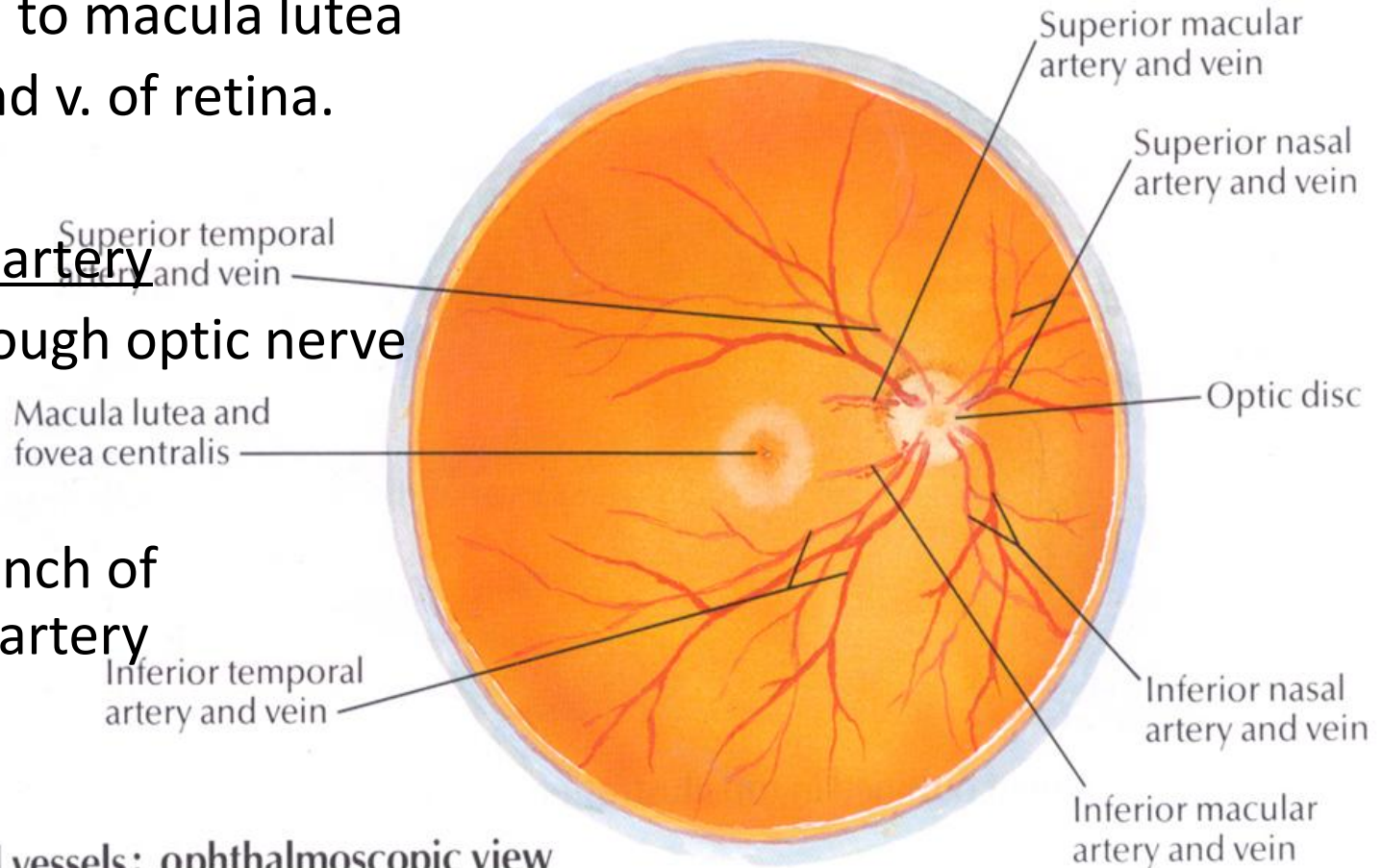
insensitive to light

3mm. nasal to macula lutea

central a. and v. of retina.

Central retinal artery

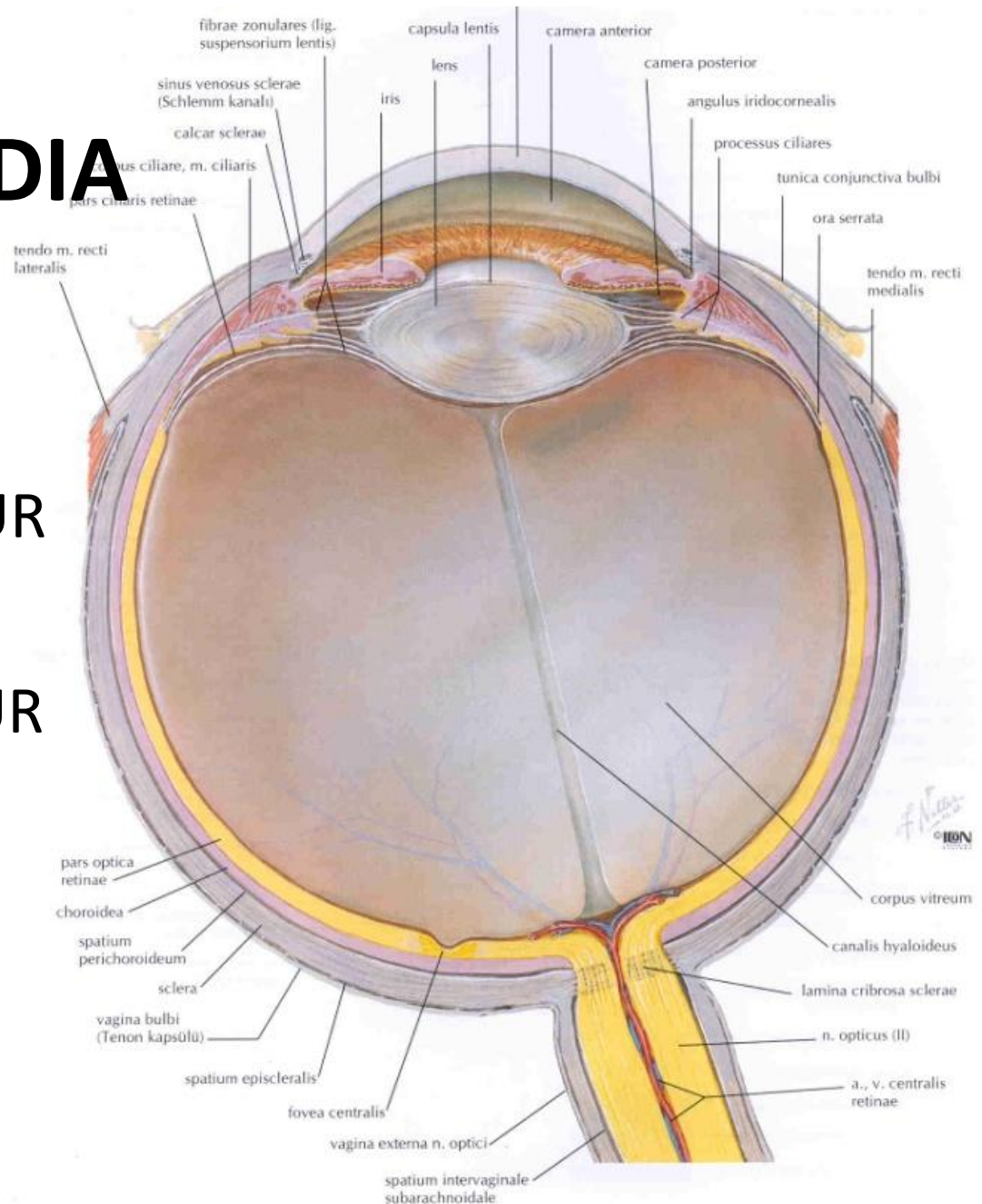
- Courses through optic nerve fibers
- The first branch of ophthalmic artery



retinal vessels: ophthalmoscopic view

OCULAR REFRACTIVE MEDIA

- CORNEA
- AQUEOUS HUMOUR
- LENS
- VITREOUS HUMOUR

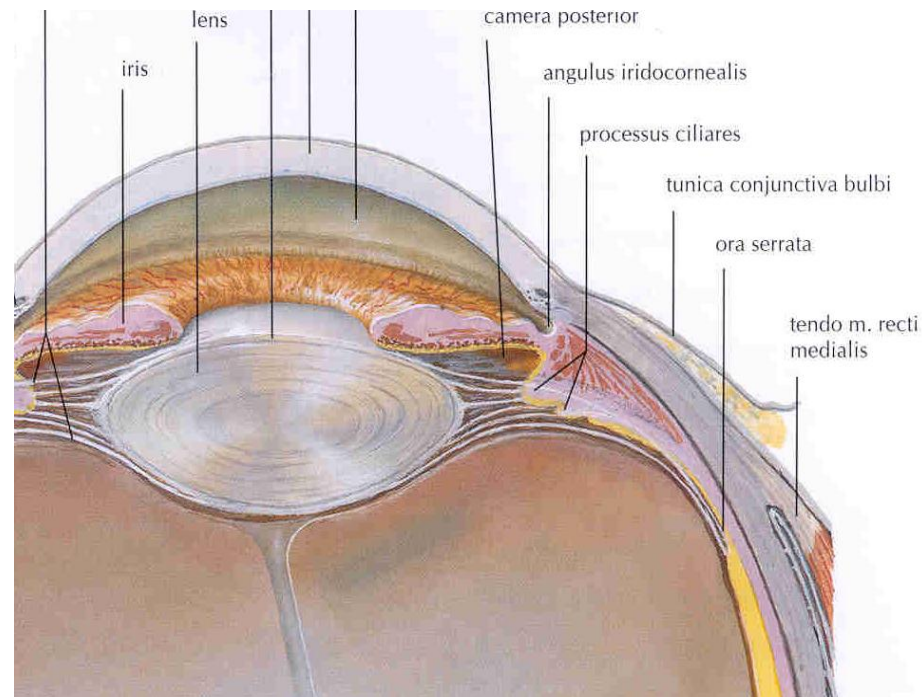


AQUEOUS HUMOR

- Fills the anterior and posterior chambers.
- Secreted by ciliary processes-

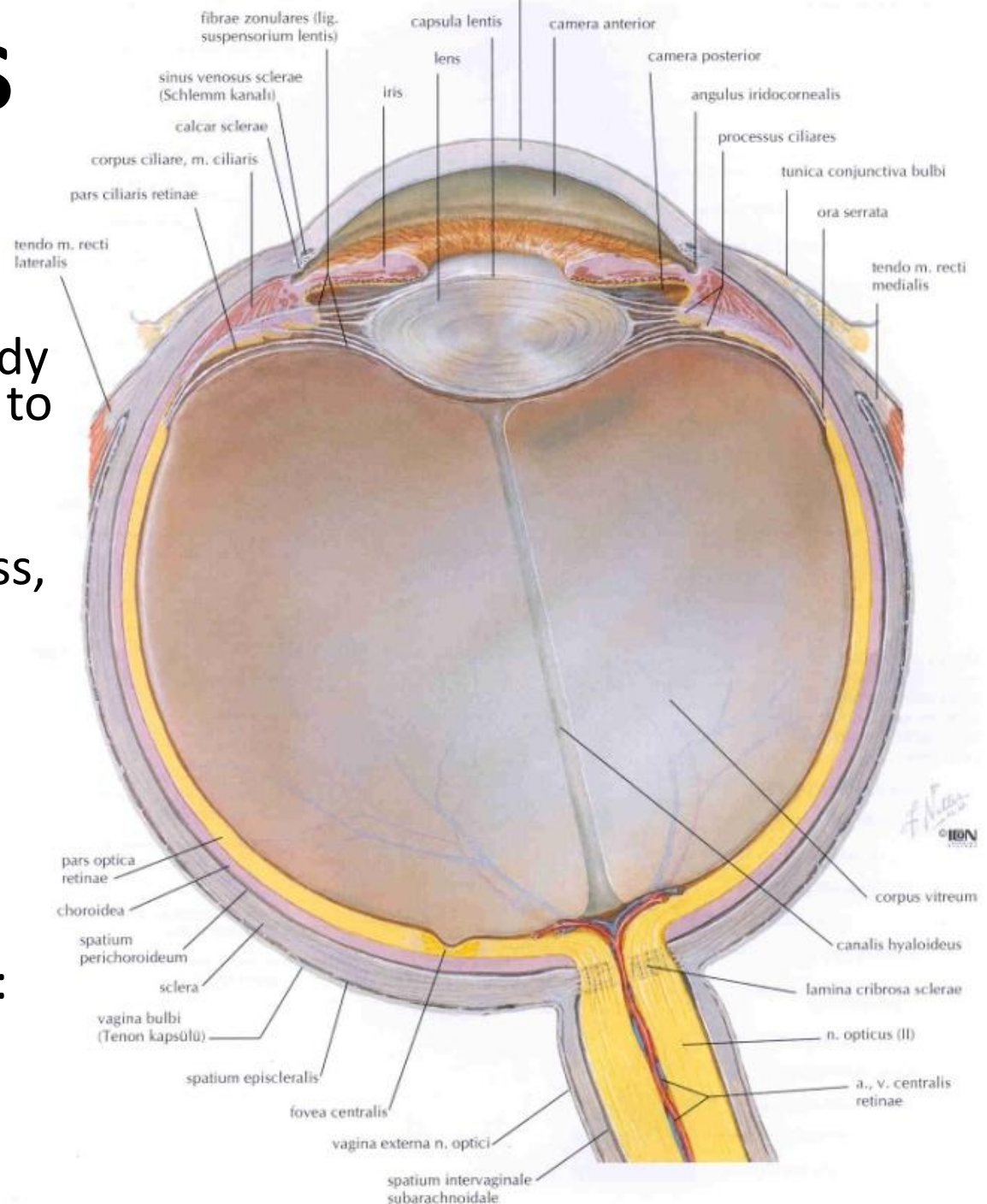
Functions

- intraocular pressure, shape of eyeball, metabolic avenue for avascular structures like cornea, lens.



VITREOUS HUMOR

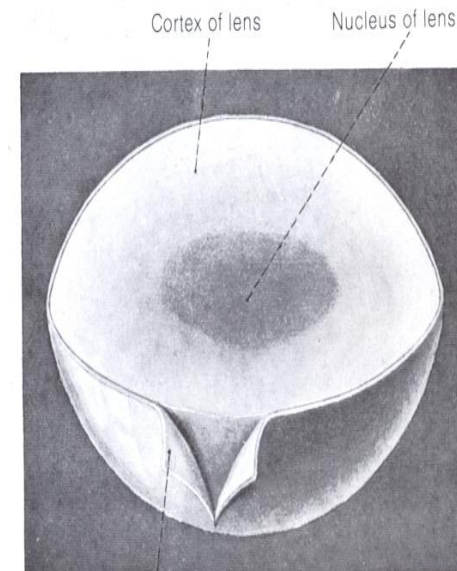
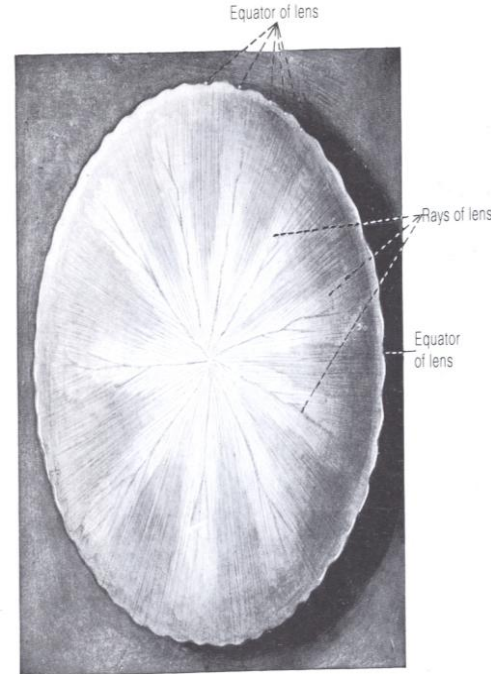
- Occupies vitreous body (chamber)- posterior to lens.
- Colorless, structureless, transparent gel



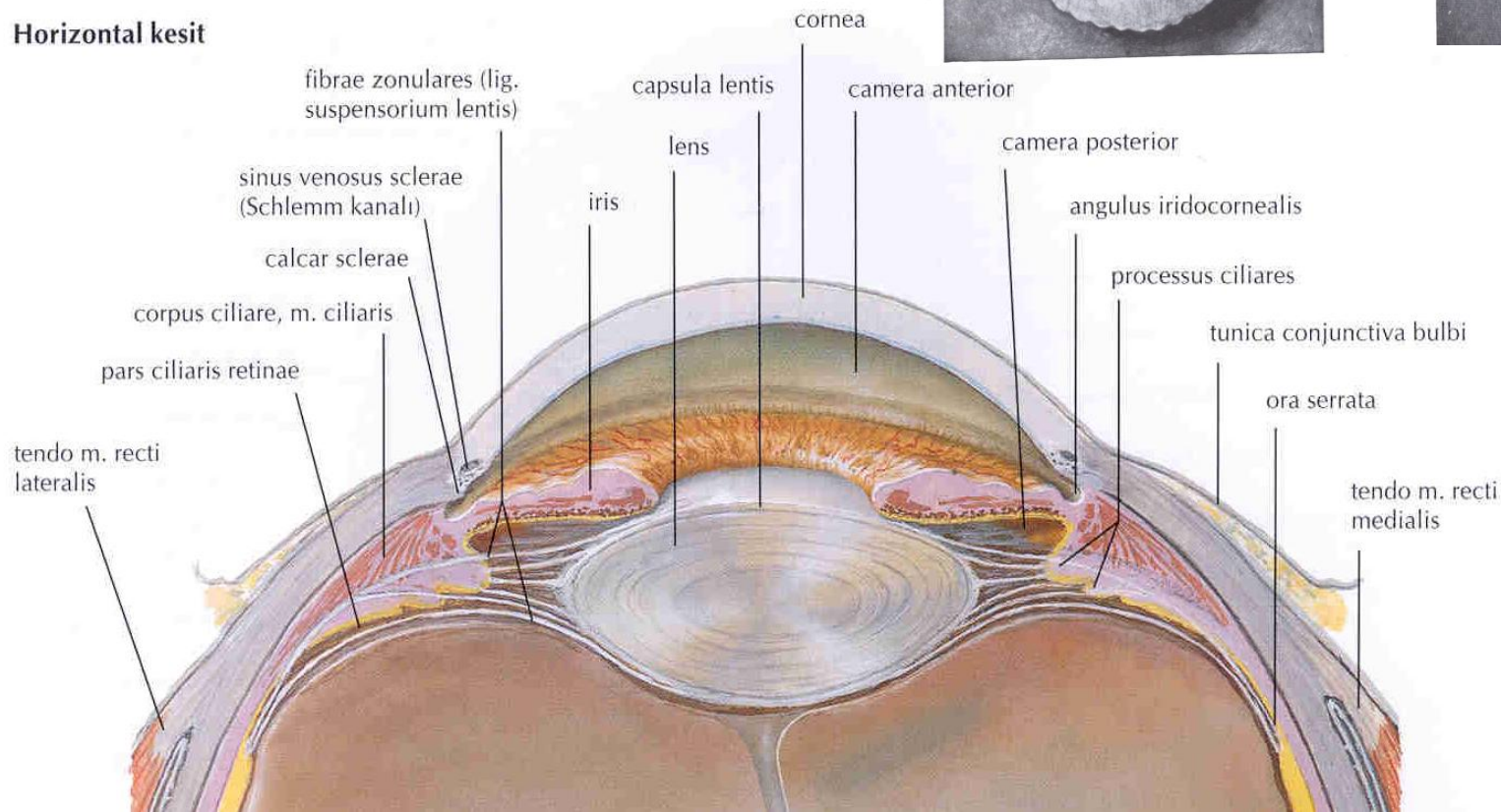
VESSELS OF THE EYEBALL:
 Artery- Ophtalmic artery
 Veins- Ophthalmic veins

LENS

- Biconvex, transparent body
- Has a capsule
- No vessels



Horizontal kesit



Visual Pathways



CRANIAL NERVE II
Optic Nerve

Vision

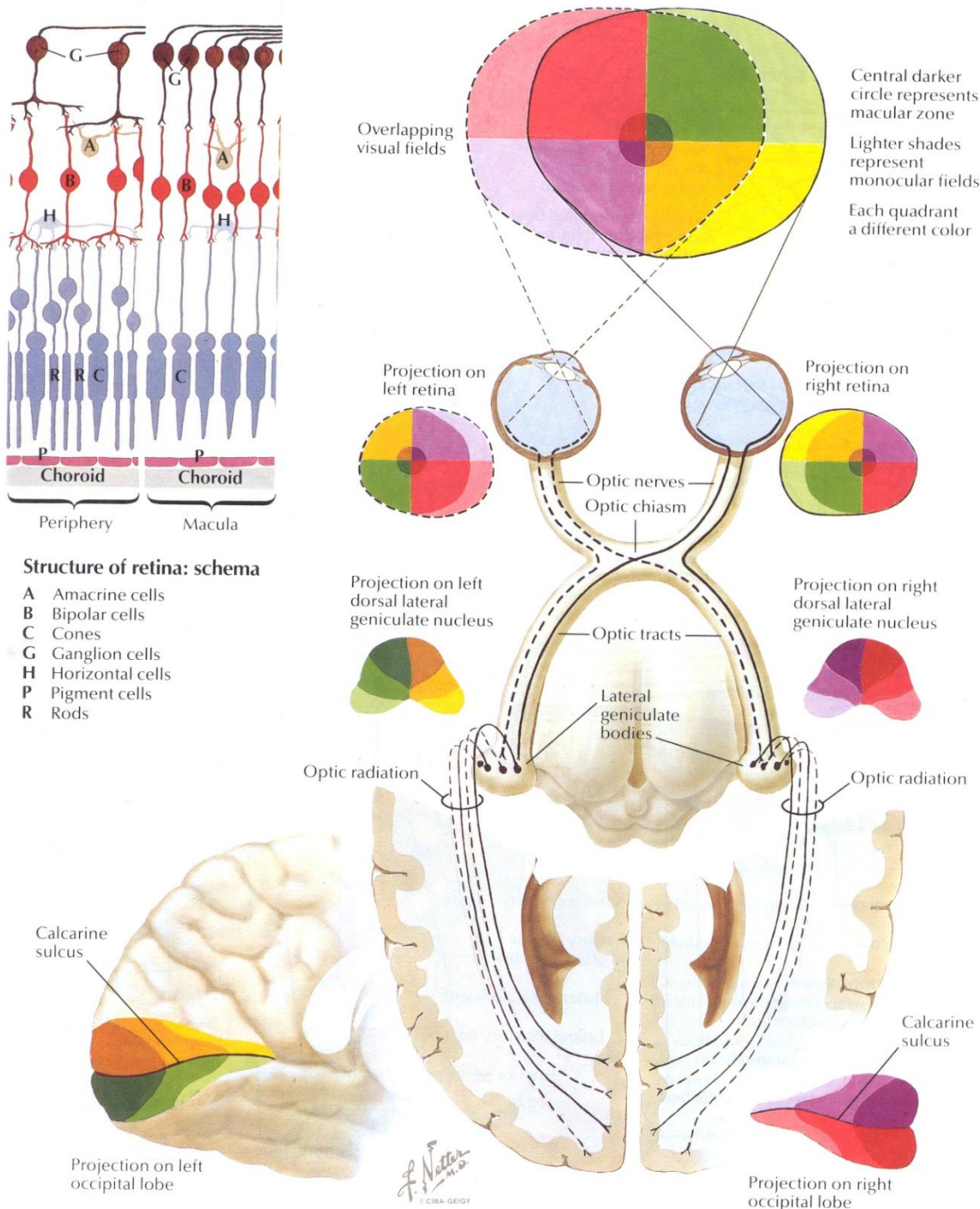
Optic nerve

Ganglionic layer of retina (innermost layer) > converge on the optic disc.

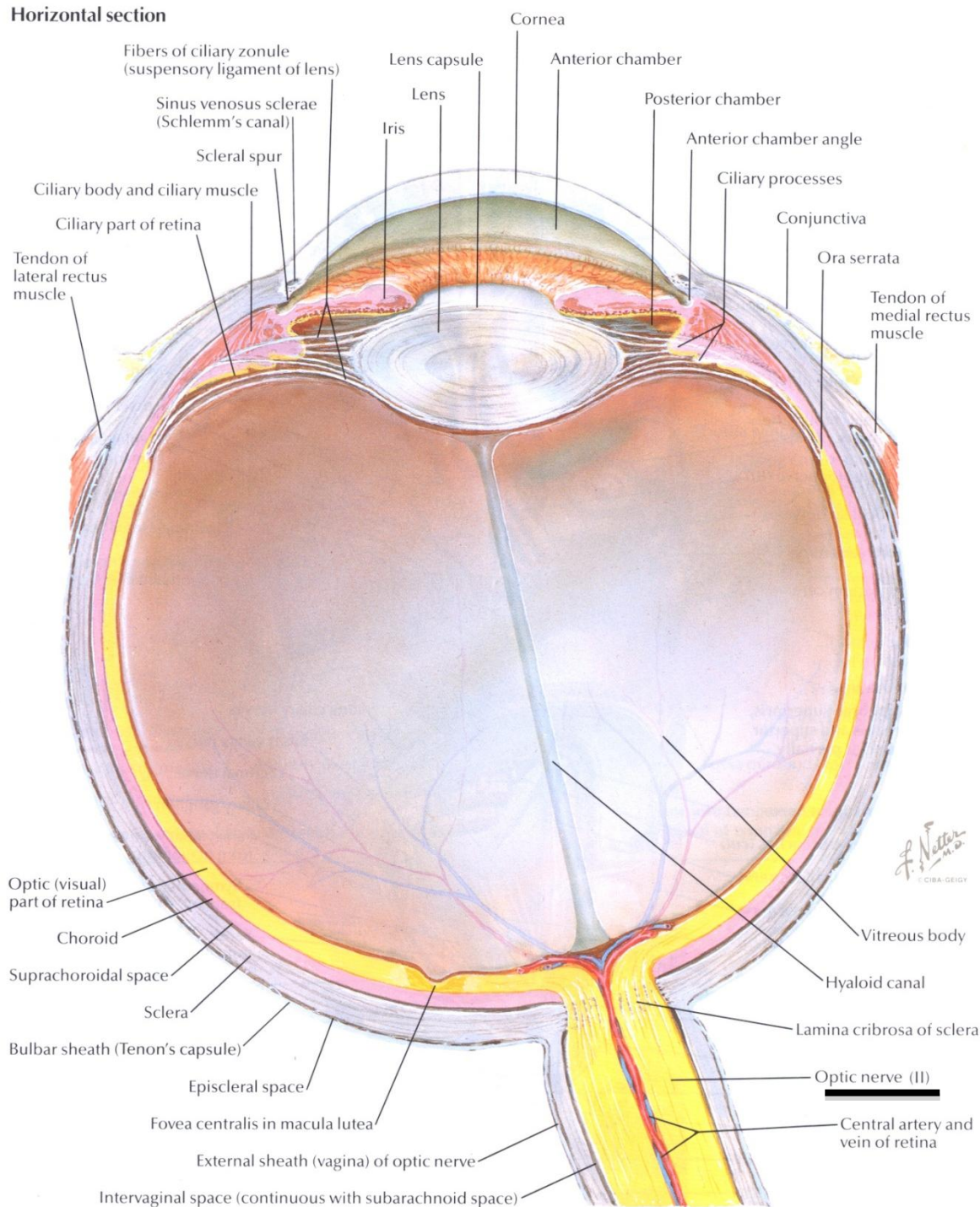
4cm long directed backwards and medially through the optic canal > cranial cavity > optic chiasma

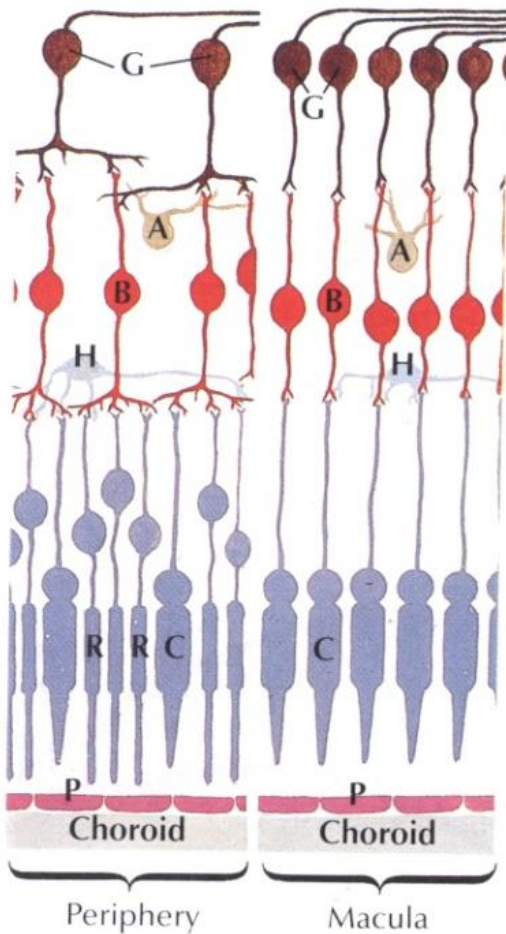
Lateral geniculate body (receives fibers only from the opposite sides of the visual fields)

Calcarine sulcus (primary visual cortex) (Area 17)



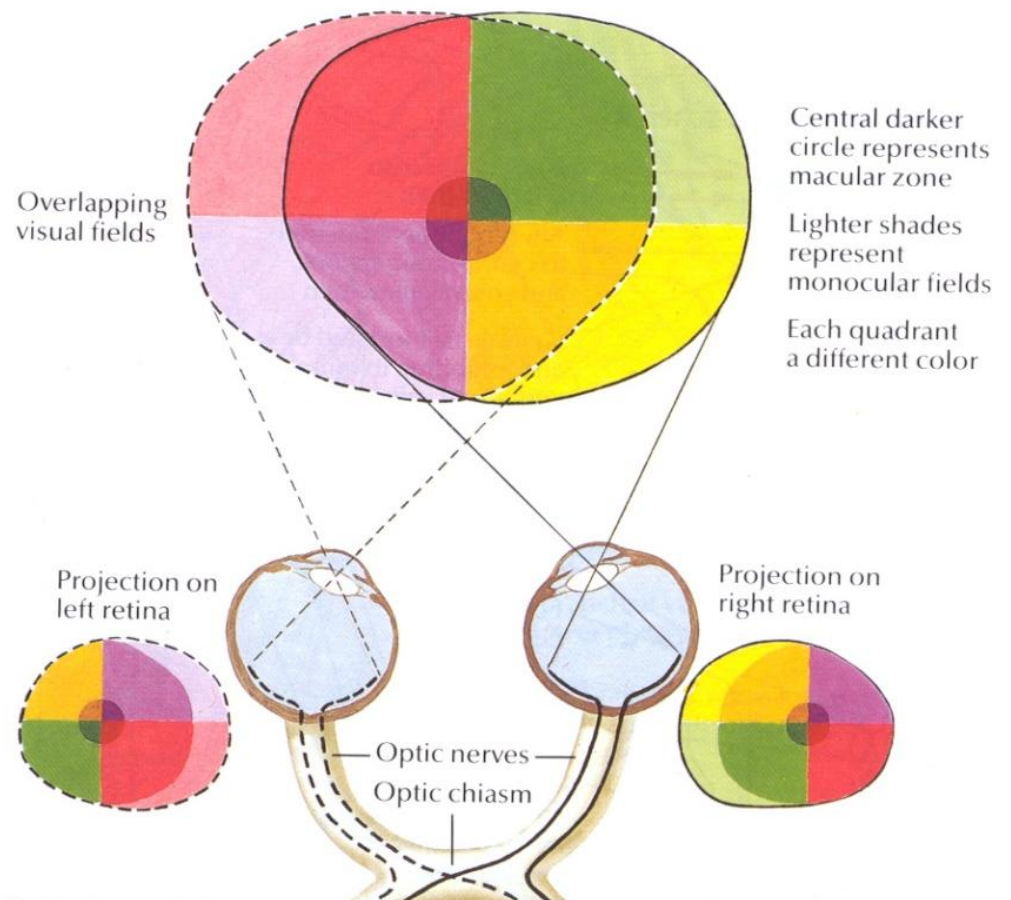
Left Eye

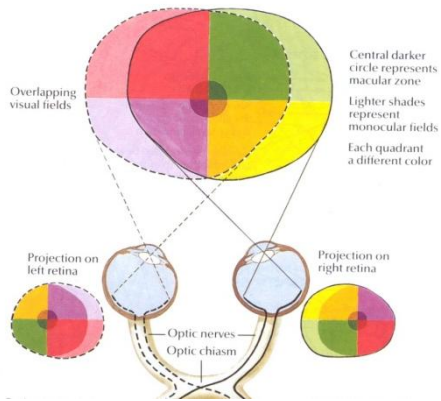




Structure of retina: schema

- A Amacrine cells
- B Bipolar cells
- C Cones
- G Ganglion cells
- H Horizontal cells
- P Pigment cells
- R Rods





Projection on left dorsal lateral geniculate nucleus



Projection on right dorsal lateral geniculate nucleus



Optic tracts

Lateral geniculate bodies

Optic radiation

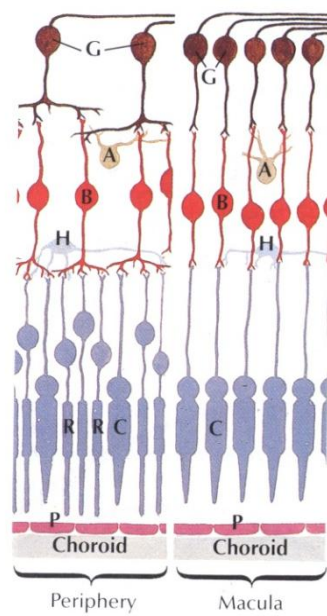
Optic radiation

Calcarine sulcus

Projection on left occipital lobe

Calcarine sulcus

Projection on right occipital lobe



Structure of retina: schema

- A Amacrine cells
- B Bipolar cells
- C Cones
- G Ganglion cells
- H Horizontal cells
- P Pigment cells
- R Rods

